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Opinions on the Robbins Wood-preserving
Process - 1868

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OPINIONS

OF EMINENT

Scientific and Practical Men

OF THE

UNITED STATES,

ON THE

ROBBINS WOOD-PRESERVING PROCESS.

BOSTON:
ROCKWELL AND ROLLINS, PRINTERS,
122 WASHINGTON STREET.
1868

Chem 8008.68.5

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ROBBINS WOOD-PRESERVING COMPANY,

OF NEW HAMPSHIRE.

President.

Joseph Stephens Abbot,	*Concord.*

Treasurer and Secretary.

Samuel C. Eastman,	*Concord.*

Directors.

J. S. Abbot,	*Concord.*
E. A. Straw,	*Manchester.*
John G. Sinclair,	*Bethlehem.*
William P. Jones,	*Portsmouth.*
Alfred W. Haven,	*Portsmouth.*
A. M. Shaw,	*Lebanon.*
James R. Kendrick,	*Concord.*
Stephen Kenrick,	*Franklin.*
Samuel C. Eastman,	*Concord.*

OPINIONS OF EMINENT MEN.

Dear Sir, — I have made a careful examination of the specimens of woods prepared by Robbins' patented method, and have made myself familiar with the principles involved in the process, and have learned in what cases the application of this method is more especially available.

Wood, whether green or seasoned, is easily impregnated with gaseous matters, and with the vapors of oil of coal tar and other volatilizable oils, the moisture and the air in the wood-cells being expelled by heat, and by substitution of the oils, which condense in the pores of the wood. By the action of the heat, the albumen of the wood is also solidified, and thus is no longer liable to chemical changes, especially on being so throughly impregnated with antiseptic fluids, which also soon harden in the cells.

The products of coal tar are powerful antiseptics; carbolic acid, or the creosote of coal, being one of the strongest known, capable of preserving both animal and vegetable matters from putrefaction, and also perfectly resisting the action of parasitic vegetation and insect depredations; for no spores can vegetate in the presence of this powerful substance, and insects of all kinds are at once repelled. Even the Teredo, which attacks ship-timber, wharves, and wooden piers, can make no entrance into wood prepared by Robbins' process. Moisture is also expelled by the oily matter infused into the wood, so that it cannot swell, and, the pores being filled with bituminous matters, the wood cannot shrink.

The samples I have seen prove all these statements, and the principles are well known to scientific men.

Coal tar has long been known to act as a preservative to wood; but it has heretofore been applied in a liquid state, either by laying it on to the wood with a brush, or by submerging the wood in the tar or tar oil.

So far as the coal-tar oil penetrated the wood it was found to act efficiently; but the cells being filled with water or with air, prevented the complete saturation of the wood with the oils; hence the process was imperfect. By Robbins' method this difficulty was overcome, and the oils were made to penetrate throughout the whole substance of the timber. This is the essential feature of his process, — that is, the expulsion of moisture and air from the wood-cells, and the filling of them with bituminous or other oils, while the heat also effects induration of albumen of the wood.

In case the smell of carbolic acid is offensive, as it might be for furniture, resin oil and palm oil may be substituted, though we cannot suppose with so perfect an antiseptic effect as would be produced by coal-tar oil. Still, this method will effectually serve some of the main purposes proposed, namely, the removal of moisture and substitution of oleaginous matters in its place. It is probable that PARAFFINE will prove one of the best substances for this substitution. It is readily volatilized, and may be driven in state of vapor into the pores of the wood. This substance is one of the most unchangeable known, and I would most earnestly recommend its trial on a practical scale. It may be obtained in any desirable quantity from the manufacturers of coal oil.

The smell of carbolic acid, or creosote, may be avoided, when necessary, by the substitution of materials which do not contain or yield it. However, for railroad sleepers, and for all outside work, exposed to the action of microscopic and other parasitic plants, and the inroad of insects and worms, it is desirable to have this matter so inimical to both vegetable and animal life, and so powerfully antiseptic.

Respectfully, your ob't servant,

CHARLES T. JACKSON, M.D.,
State Assayer to Massachusetts.

To J. F. PAUL, ESQ.,
441 *Tremont Street, Boston.*

DARTMOUTH COLLEGE, July 20th, 1868.

Robbins Wood Preserving Company.

GENTLEMEN, — The chemical nature of the material (Coal Tar) employed in your "Process," allows me to say, that it will precipitate, or render insoluble, the albumen in the wood-cells; that it will not sensibly absorb moisture, consequently the prepared wood will not swell or shrink; that it will exclude the air; that it is not rapidly removed by pure water, nor by that containing the usual acids, alkalies, and salts found in the air and soils.

I regard the process as superior to all others before the public.

L. B. HALL,
Professor of Chemistry, C. S. D.

DARTMOUTH COLLEGE,
HANOVER, N. H., July 21, 1868.

I have examined the method of preserving wood employed under the "Robbins' Patent," and I am satisfied on scientific grounds that it is all it claims to be. I think there can be no doubt that this treatment of wood will secure two important ends, durability and freedom from shrinking and swelling, both of which are the result of rendering the wood impervious to moisture.

E. T. QUIMBY,
Professor of Math. and Civ. Eng., Dart. College.

DARTMOUTH MEDICAL COLLEGE,

HANOVER, N. H., July 20th, 1868.

I hereby certify that I have recently examined, with much satisfaction, some specimens of wood subjected to a bitumenizing process, with a view to preventing decay. I am indebted to Col. Worthen and Mr. King for this pleasure.

After a careful examination of the pieces of wood so treated, and an investigation of the method by which it is accomplished, I am free to express an opinion entirely in its favor.

The process is based on scientific principles; the material used perfectly preservative; and the appearance of the specimens presented warrants the belief that this most useful invention will eventually come to be employed wherever wood is used, even in the most common arts.

Taking into account its simplicity, cheapness, and efficiency, I am of the opinion that the invention cannot fail to prove invaluable to the world, and exceedingly remunerative to its owners.

A. B. CROSBY, M. D.

Prof. Surgery University of Vermont, Dart. Med. Col., etc.

HOUSE OF REPRESENTATIVES,

CONCORD, N. H., June 30, 1868.

MESSRS. PEYTON & WORTHEN, — Having examined, with a good deal of care, the specimens of wood preserved in accordance with methods of the Robbins Wood Preserving Co.'s Patents, as also the chemical principles upon which the process is based, I am prepared to express my entire conviction of its great utility in all the immense variety of uses to which wood is put.

It is believed that the wood subjected to this process, if not absolutely rendered indestructible, has its durability increased many fold. Its strength is also, as has been found by experiment, very materially increased; and when we consider in addition, that green wood is, in a few hours, seasoned more perfectly, than by years by any of the old methods, thereby causing a great saving in time, and a very large diminution of the capital required in the prosecution of many of the manufactures into which wood largely enters, we cannot hesitate in pronouncing this one of the great discoveries of the age.

Its utility to the farmer, and in fact to every man who has a rod of fence or a ditch to maintain, must be obvious. In fact, it is difficult to imagine a class in community or a material interest that will not be benefited by the general introduction of this wood-preserving process. It commends itself by the ease and cheapness of its practical application, as well as by the harmony of the principles on which it rests with Chemical Science.

THOMAS R. CROSBY, M. D.,
Bvt. Lt. Col. Late Surgeon N. H. V.; Prof. of Gen'l Surgery, Nat. Med. Col., Washington, D. C.

College of New Jersey,
Princeton, Mar. 23, 1868.

Col. J. E. Peyton:

My dear Sir, — Your note is in hand. I extremely regret to believe that I shall be unable to leave my duties here on the day appointed for the meeting of the delegates from the Robbins Wood Preserving Companies of several States, including

New Jersey. You know my views respecting this process, and its effect upon wood. You heard what I felt called upon to say to our Senior Class, when speaking to them of the great value, and numerous important applications, of the coal-tar products. I then believed, and now still more fully believe, in the great value of these compounds for preserving wood, as applied by the Robbins process. When you have thoroughly permeated a stick with naphtha and creosote, — like vapors, and carbolic acid, and paraffine, — and at the same time expelled all moisture, no chemist will hesitate to pronounce the stick preserved and protected from decay. And this is the whole case. It needs but few words; a stick or a board may be split or pounded to pieces, or may be burned; this you do not propose to prevent. But to provide against the rotting and decay of timber is a demand which I consider the Robbins process competent to supply. And this is a great affair. When for fencing, for timber and building materials, for railroad ties and bridges, and rolling stock and wharves, an addition of five or ten per cent. to the cost will increase the durability, and prolong the lifetime two, three, or five hundred per cent., saving at the same time the expense of paint, it is not difficult to appreciate the value to the world, of this application of science to the increasingly important art of preserving wood. If 100,000 acres were stripped of timber in the single State of Michigan, last year, it is time we awoke to the imperative necessity that exists for some steps in the direction of wood preservation.

This matter has its bearing on our shipping interests also. Wherever timber, or plank, or canvas, or cordage, are liable to decay, or dry-rot, or mould, or mildew, there the Robbins process is the antidote. Let those interested see to this.

But I esteem this treatment of wood for its preservation, scarcely more important than for its prompt and perfect seasoning. To completely season a green stick, or board, within a few hours, so as not only to expel all its water, but leave it in a condition to absorb no more and thus never swell again; to convert green oak, or hemlock, into the equivalent of seasoned locust, — this is a great desideratum. Builders, and wood-workers, and wood-users will understand this.

The chemistry of this process is right. I believe the practice of it will satisfy all reasonable expectations; you may say this for me to any who are interested in knowing my opinions.

Yours, very truly,

J. S. SCHANCK,

Professor of Chemistry, Princeton College, N. J.

PRINCETON, N. J., May 6, 1868.

Col. J. E. Peyton:

DEAR SIR,—Having read, with care, the letter written to you by my friend and colleague, Dr. Schanck, on the Robbins Wood Preserving Process, I beg to say that I fully concur in the opinion expressed by him, on the correctness of the scientific principle on which it rests, and on the extensive practical uses to which it may be applied.

I trust that the country will soon appreciate its value, and reap the full benefit which can be derived from it.

I remain respectfully yours,

A. GUYOT,

Professor of Geology, and Physical Geography,
Princeton College, New Jersey.

NEW BRUNSWICK, N. J., March 24, 1868.

Col. J. E. Peyton:

DEAR SIR,—I regret that my duties are such as to prevent my leaving home to-morrow. It would be an occasion of much interest to me to meet the gentlemen who are to take the lead in introducing the Robbins Wood Preserving Process.

The chemistry of the process, both in the preservative and protecting substances used, and in the way of applying them, is so complete as to scarcely leave anything further to be desired. The article on *Carbolic Acid* in a late number of the "Chemical News," you already have. The author of it is probably the best authority in the world, on the subject, and his testimony is entirely in its favor. The short article on *Napthalin* in the same paper gives a summary of what is known of that substance; a solid, impenetrable to water, insoluble in it; melting at 175°, and boiling at 428°; its vapor follows that of the carbolic acid (which goes off at about 360°), and forms a firm protecting coat in the whole outer portions of the wood, and supplements admirably the preservative properties of the carbolic acid.

In addition to the preservative properties so useful for wood, the late investigations of Mulder show that coal tar contains the best known materials for a protecting coat against the rusting of iron.

An article in the "London Engineer," of Nov. 15, 1867, on the Bethel method of creosoting, and its effect on the strength of timber, is made from the Report of M. Forestier, Engineer in Chief of the French Ponts et Chaussées, to the Paris Exposition. He proved that creosoted fir-wood presented a coherence of fibres, an elasticity and hardness much superior to what it possessed before. In trying the resistance to bending, it was found that the flexibility of wood was slightly increased by creosoting. A large number of experiments were made, which uniformly showed that creosoted wood was capable of resisting a much greater crushing force than wood that had not been treated.

He also proved that such wood is completely proof against the marine worm, *teredo navalis.*

With such facts in favor of the principles involved in the Robbins process, and such testimony in its favor, and so extensive a field in which to apply it; there is, in my opinion, good reason for sanguine expectations of business success.

Some of the details of the application may need study and experiment, — for example, the temperature best for developing the properties of strength and elasticity, — that best for securing the highest degree of hardness, — the time which may be most advantageously consumed in permeating sticks of various sizes, etc., etc. But these points the scientific and business talent of those interested will soon settle in a practical and prudent way.

Trusting that the efforts making in this line will soon culminate in a success,

I remain yours truly,
GEORGE H. COOK,
State Geologist, and Prof. of Chem., Rutgers Col.

OPINIONS OF PRACTICAL MEN.

CONCORD, N. H., Aug. 14, 1868.

Col. J. E. Peyton, Parker House:

DEAR SIR, — You ask our opinion of the Robbins process for treating wood. So well convinced are we of its value for preserving ties, bridge timber, fence material, and other woods used in the construction and repairs of railroads, that, after a careful investigation, we, as superintendents of the various roads centring here, have concluded to erect works for the purpose of treating material.

The process is yet in its infancy, and may require some further experiments in the time required for the treatment of the various kinds and sizes of timber, but we have no doubt of its ultimate success.

J. A. DODGE,
Supt. B., C., & M. R. R.
JAS. R. KENDRICK,
Supt. Concord R. R.
GEO. E. TODD,
Supt. Northern R. R.
A. M. SHAW,
Eng. Northern R. R.

Chem

MANCHESTER, Aug. 13, 1868.

Col. J. E. Peyton, Parker House, Boston:

DEAR SIR, — I am so well satisfied of the preservative qualities of the material used in the Robbins patent process, and the manner of applying it, that I shall, as early as convenient, convert the sixty-foot tank, capacity of ten thousand feet, now used by the Amoskeag Manufacturing Co. for Burnettizing, into use under the Robbins patent.

Very respectfully yours,
E. A. STRAW, *Agent.*

NO. 246 WASH. ST., BOSTON, Aug. 6, 1868.

Col. J. E. Peyton, Parker House:

DEAR SIR, — You ask our opinion of the Robbins process for treating wood. We have examined the subject with great care, and believe it to be the readiest and most perfect process for seasoning wood known. The smell of coal tar is objectionable in the manufacture of piano-fortes, but experiments are being made by scientific gentlemen to deodorize it, and we hope with success.

As soon as perfected we shall erect works at the factory, and use it upon all wood material used by us, as it is a perfect guaranty against expansion and contraction by the changes in the atmosphere.

The effect of the treatment in rendering wood durable is so well established by scientific men that it is useless for us to refer to it.

Very respectfully,
CHICKERING & SONS,
Piano-forte Manufacturers, Boston, Mass.

CONCORD, N. H., Aug. 14, 1868.

Col. J. E. Peyton, Parker House, Boston:

DEAR SIR, — We have carefully examined specimens of hubs, felloes, and other material used in the manufacture of coaches, treated by the Robbins patent process. They seemed to be thoroughly seasoned, and from the fact that it is done with the hot vapors of coal oil, it is not reasonable to suppose that they will absorb moisture, and they are therefore not liable to expand, contract, or check. If wood can be seasoned within a few hours, its value to the mechanic arts can scarcely be appreciated.

Paint, so far as tested, adheres very well, except upon the end of wood.

We have such faith in the process that we have already applied it to the felloes of wheels on carriages sent to Louisiana and Texas, and have no doubt of beneficial results.

Very respectfully,
ABBOT, DOWNING, & Co.

Boston, August 1, 1868.

Col. J. E. Peyton, Parker House:

Dear Sir, — Our investigations into the Robbins process for treating wood have induced us to become interested in the right for the State of Massachusetts, with a view to its use in our own factories. Specimens of hubs, and other carriage material, that we have examined, show no indication of checking, and we are satisfied had been better seasoned in a few hours than they could be in a long time by any former process. Wood not being liable, under this treatment, to expand or contract, makes it very desirable in the manufacture of coaches and carriages for shipment to various countries, as they will not be affected by changes of climate.

We have no doubt of its preservative properties upon wood exposed to dampness and liable to premature decay.

Very respectfully yours,
KIMBALL BROS. & CO.

Boston, August 7, 1868.

Col. J. E. Peyton, Parker House:

Dear Sir, — In answer to your inquiries as to the practical tests made by me, of wood treated under the Robbins patent process, I would respectfully state that works were erected under my direction in February last, in which I have had numerous specimens of various kinds of wood treated both in the rough and manufactured state. In no instance have I had a failure. The effect upon black walnut gives a striking illustration of the action of the process upon wood. I have taken it in a perfectly green state, and in a few hours seasoned it more thoroughly than I have been able to do in any length of time under the ordinary process. Newel posts and baluster railing, taken in the rough, treated and worked afterwards, have never checked or warped, and, when polished, present a better finish than by the old method of filling in. The same will apply to all other woods treated and manufactured at our works. I am also satisfied that the strength of the wood is greatly increased. For its durability where exposed to premature decay, I must refer you to the opinions of eminent scientific men who have investigated the subject, and to the test of time. You are aware that I am interested in the right for Massachusetts, and the works being erected in this city. Very respectfully yours,

JOSEPH F. PAUL.

BOSTON, August 7, 1868.

Col. J. E. Peyton, Parker House:

DEAR SIR, — Having examined with care, specimens of various kinds of woods treated by the Robbins patent process, I am fully convinced that the preservative properties of coal tar can be applied to timber of any length or size, and, when thoroughly treated, will last for an indefinite period, and that the strength of the wood is greatly increased.

The preservative properties of coal tar are so well understood that I need scarcely refer to anything but the manner of its application.

I can readily perceive that by the application of heat, the oil is easily separated, the lighter portion, — naphtha — being carried through the pores of the wood, removing all air and moisture, followed by the well known powerful antiseptic, carbolic acid, then paraffine, and the heavier oils, which, condensing in the pores, and not being soluble in water, will, in my judgment, preserve the wood until it wears out.

I am satisfied that ship plank treated by the Robbins process, will be thoroughly protected from the destructive marine worm, *teredo navalis*, which ought to be a sufficient guaranty of its early introduction and general use in the marine service.

Very respectfully, your obd't servant,

W. L. HANSCOM,

Late U. S. Naval Constructor.

Boston, August 18, 1868.

Col. J. E. Peyton, Parker House:

Dear Sir, — I have examined the Robbins process for preserving wood, and have come to the conclusion that it is the best and only satisfactory method, that has ever been brought to my notice, for the treatment of wood, to prevent its decay and contraction and expansion.

I make no pretensions to a knowledge of chemistry, but I am well acquainted with nearly all kinds of wood, and have worked in, and used them twenty-five years. I have seen and felt the necessity of something of this kind, and I believe this process is the most important discovery of the age, pertaining to wood.

Yours truly,

C. K. KIRBY, *Architect.*

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Opinions of eminent scientific and
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